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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/049,589
Filing Date: April 03, 2002
Appellant(s): VIHRIALA, JAAKKO

MAILED
JAN 22 2008
GROUP 2800

John A. Garrity
For Appellant

EXAMINER'S ANSWER

MAILED
JAN 22 2008
GROUP 2800

This is in response to the appeal brief filed 26 November 2008 appealing from the Office action mailed 21 March 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,526,039	DAHLMAN et al.	2-2003
6,275,483	PAPASAKELLARIOU et al.	8-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6, 9-14, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Dahlman et al. (USPN 6,526,039), of record.

3. Regarding claims 1, 9, and 17, Applicant discloses as prior art a method comprising performing synchronization of a mobile network device to a network control device of a present radio network region (p. 3, lines 5-28, where propagation delay is important for performing synchronization), the method further comprising: detecting that a handover from a source radio network region to said present radio network region has been performed (p. 2, line 33-p. 3, line 34, where a current base station implicitly detects that a handover has occurred from a source cell to itself since the current base station thereafter begins to communicate with the mobile station, e.g. the current base station communicates the TA to the mobile where the TA is based on the propagation time between the base station and the mobile); determining a start propagation delay value (p. 2, line 33-p. 3, line 34, where any search will start with an initial value, see also p. 4, lines 25-34); and searching an actual propagation delay value by using a search strategy based on said determined start propagation delay value (p. 2, line 33-p. 3, line 34 and p. 4, lines 25-34, where the current base station searches for the propagation delay value using minimum propagation delay and a maximum propagation delay for a cell).

Applicant does not admit as prior art detecting a source radio network region from which a handover of said mobile network device to said present radio network region has been performed and determining the start propagation delay value based on said detected source radio network region of said mobile station. Dahlman teaches, in a system for performing a delay search for synchronization purposes, detecting a source radio network region from which a handover of said mobile network device to said present radio network region has been performed (col. 6, lines 3-18, where the BSC stores a table containing a list of the delays between a source BS and neighboring BSs, such that any use of this information requires knowledge of the source BS and the neighboring BS, i.e. the current BS of Applicant, see also col. 2, lines 11-15) and determining the start delay value based on said detected source radio network region of said mobile station (col. 6, lines 25-36, where the start delay value is determined based on the source and current base station and then used when performing a search). Dahlman discloses that using a start delay value based on a detected source radio network region when performing a search reduces search time (col. 5, lines 3-11). As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the delay information of Dahlman in the network of Applicant's admitted prior art by detecting a source radio network region from which a handover of said mobile network device to said present radio network region has been performed and determining the start propagation delay value based on said detected source radio network region of said mobile station in order to reduce propagation delay search time.

4. Regarding claims 2 and 10, Applicant's admitted prior art in view of Dahlman discloses that start propagation delay values are stored in a database for a plurality of adjacent sectors (Dahlman: col. 4, lines 30-47, see also col. 6, lines 3-18).

5. Regarding claims 3 and 11, Applicant's admitted prior art in view of Dahlman discloses updating said database with said searched actual propagation delay value after performing said search step (Dahlman: col. 6, lines 14-18, see also col. 6, lines 31-36).

6. Regarding claims 4 and 12, Applicant's admitted prior art in view of Dahlman discloses that one start propagation value is stored for each adjacent sector (Dahlman: col. 4, lines 30-47, where "one start propagation value" is interpreted to mean "at least one" rather than "only one," see also col. 6, lines 3-18).

7. Regarding claims 5 and 13, Applicant's admitted prior art in view of Dahlman discloses that for each adjacent sector the estimate is updated using a plurality of start propagation values (col. 6, lines 14-18, see also col. 6, lines 31-36). Applicant's admitted prior art in view of Dahlman does not expressly disclose using an average of said plurality of start propagation values as a basis for said search strategy. However, Examiner takes official notice that averaging is a well-known mechanism for combining a plurality of estimates into a single estimate. As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to use an average of said plurality of start propagation values as a basis for said search strategy.

8. Regarding claims 6 and 14, Applicant's admitted prior art in view of Dahlman discloses that a distribution of said plurality of start propagation values is also used as the basis for said search strategy (Dahlman: col. 6, lines 3-18, where the database is distributed to the device which is going to use the estimate to perform the search).

9. Regarding claim 18, Applicant's admitted prior art in view of Dahlman discloses that the means for detecting comprises a source cell detector (Applicant: p. 2, lines 2-14, where the BSC, as broadly defined, has a "source cell detector" since it knows which cell is the source

cell, see also Dahlman: col. 6, lines 14-25); the means for determining and the means for searching comprise a controller coupled to a memory (Dahlman: col. 6, lines 56-67, where the device that controls the actions of the mobile station is, as broadly defined, a "controller" and where the controller is coupled to a memory that stores the neighbor cell list information).

10. Claims 7, 8, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Dahlman et al. (USPN 6,526,039), of record, as applied to claims 1 and 9 above, and further in view of Papasakellariou et al. (USPN 6,275,483), of record.

11. Regarding claims 7, 8, 15, and 16, Applicant's admitted prior art in view of Dahlman does not expressly disclose that said search strategy is expanding window or z-search; however, Applicant's admitted prior art in view of Dahlman does disclose that the time-search window can vary (Dahlman: col. 7, lines 39-45, where the time-search window is modified based on the level of uncertainty of the RTD estimate). Papasakellariou teaches, in a mobile communication system, that expanding window and z-search are conventional search techniques to search a search window (col. 5, lines 31-34). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to search the search window of Applicant's admitted prior art in view of Dahlman by using expanding window or z-search, which are conventional search techniques.

(10) Response to Argument

Appellant's arguments focus exclusively on the secondary references, i.e. Dahlman et al. (USPN 6,526,039) (hereinafter "Dahlman") and Papasakellariou et al. (USPN 6,275,483) (hereinafter "Papasakellariou"). Appellant never analyzes how these secondary references relate

to the primary reference, i.e. Applicant's/Appellant's own admitted prior art (hereinafter "AAPA"). Because understanding the extent of the teachings of the primary reference and how the primary reference and secondary references relate to each other is crucial to understanding why Examiner asserts that the claims are obvious in view of this prior art, Examiner will first outline the teachings of AAPA and how the secondary references remedy any deficiencies in AAPA before responding to Appellant's arguments.

As set forth in the above rejections, and not contested by Appellant, AAPA discloses, among other things, detecting that a handover from a source radio network region to a present radio network region has been performed; determining a start propagation delay value; and searching an actual propagation delay value by using a search strategy based on the determined start propagation delay value. In addition, Examiner asserted in the rejection that AAPA does not disclose detecting a source radio network region from which a handover of a mobile device to a present radio network region has been performed or determining the start propagation delay value based on the detected source radio network region of the mobile station. Examiner will proceed by analyzing the prior art first with relation to the "determining" step and then with relation to the "detecting" step.

To understand why AAPA in view of Dahlman renders obvious the limitation "determining the start propagation delay value based on the detected source radio network region of said mobile station", it is important to understand what this limitation encompasses. As outlined in the rejection set forth above, AAPA teaches performing a search for a propagation delay value; however, this search starts "from scratch" because it searches for the actual propagation delay value by searching from a minimum to a maximum propagation delay for the

cell (Specification: p. 4, ll. 28-32). In the aforementioned limitation, the phrase "start propagation delay value based on the detected source radio network region of said mobile station" refers to an estimation of what the final propagation value will be. Thus, in essence, what AAPA does not teach is starting the search for the actual propagation delay value using an initial value which is an estimation of the actual value. However, the technique of using an estimation of a searched value as an initial search value is known in the art as a way to shorten search time, as evidenced by Dahlman (col. 4, ll. 38-50, where Dahlman teaches using an estimate of the timing of a base station to search for the actual timing of the base station, see also col. 4, ll. 22-26). As such, Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to apply Dahlman's search technique to AAPA's system by having AAPA's system determine the actual start propagation delay value based on an estimate of the actual propagation delay value in order to obtain a system which has a shortened search time.

In addition, the combination of AAPA in view of Dahlman teaches "detecting a source radio network region from which a handover of a mobile device to a present radio network region has been performed". AAPA teaches that "cell boundaries are not sharp but ambiguous due to shadowing and the like" (Specification: p. 2, ll. 28-30). Because physical obstructions that cause shadowing and other impairments to radio communication are not uniformly distributed around a cell, the boundary of a cell is not a uniform distance from the base station. Therefore, the propagation delay of a mobile entering the cell from one direction will be different than the propagation delay of a mobile entering the cell from a different direction, which suggests that for the fastest search the starting estimates of propagation delay should also vary

depending on the direction from which a mobile enters a cell. Dahlman discloses that each base station stores tables listing starting estimates for searches for each of its neighboring base stations (BS) (col. 4, ll. 38-40), where these tables are compiled by a base station controller (BSC) from previously determined measurements (col. 8, ll. 38-48). Further, AAPA discloses that the BSC knows between which cells a handover is taking place, such that the BSC will be able to inform the BS as to which source radio network region the handover of a mobile device has been performed (Specification: p. 1, l. 34-p. 2, l. 8). Thus, the combination of AAPA and Dahlman suggests having a BS "detect" from a BSC the source radio network region from which a handover is performed in order to determine an estimate of a propagation delay (derived from measurements of previous propagation delays) to be used as a start value for a propagation delay search from a table of such delays located in the BS. As such, Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to apply Dahlman's search technique to AAPA's system by having AAPA's system detect a source radio network region from which a handover of a mobile device to a present radio network region has been performed and then determine the start propagation delay value based on the detected source radio network region of said mobile station in order to obtain a system which has a shortened search time.

Examiner will now respond to Appellant's arguments.

Appellant's first contention is "that the Examiner fails to take into account the difference between an estimated RTD and an actual propagation delay". Appeal Brief: p. 7 (emphasis omitted). As such, Appellant contends that "Dahlman [which teaches searching for RTD] cannot be seen to disclose or suggest determining a start propagation delay value based on a detected

source radio network region." *Id.* at p. 8 (emphasis omitted). Examiner agrees that Dahlman, taken individually, does not disclose searching for a start propagation delay value. However, Examiner submits that the *combination* of AAPA and Dahlman does disclose this limitation. As set forth in the above rejection, Examiner only relies on Dahlman to teach determining the "start delay value" (not a start propagation delay value) based on the detected source radio network region of said mobile station, ¶ 3 of Section (9) as seen above, i.e. Examiner relies on Dahlman only to teach using an estimation of the actual value as the start value of a search. Thus, Examiner never relied on Dahlman to teach a start *propagation* delay value. Rather, Examiner relies on AAPA to teach a start propagation delay value. As such, Examiner maintains that the combination of AAPA and Dahlman discloses determining a start propagation delay value based on a detected source radio network region.

Appellant further contends that "the improved estimate of the RTD as cited by the Examiner and disclosed in Dahlman is not seen to disclose or suggest an actual propagation delay value". Appeal Brief: p. 8 (emphasis omitted). Again, Examiner agrees that the improved estimate of the RTD is not an actual propagation delay value. However, Examiner submits that Dahlman is never relied upon to teach searching for an actual propagation delay value. Rather, AAPA is relied upon for this proposition (see e.g. Specification: p. 2, line 33-p. 3, line 34 and p. 4, lines 25-34, where the current base station searches for the propagation delay value using minimum propagation delay and a maximum propagation delay for a cell). As such, Examiner maintains that AAPA, not Dahlman, discloses searching for an actual propagation delay value.

Additionally, Appellant contends that "there is no disclosure in Dahlman to disclose [sic] or suggest that the improved estimate of the RTD is the result of searching an actual propagation

delay value by using a search strategy based on a determined start propagation delay". Appeal Brief: p. 8 (emphasis omitted). Again, Examiner agrees that Dahlman, taken individually, does not teach searching an actual propagation delay value by using a search strategy based on a determined start propagation delay. Rather, as outlined above, it is the *combination* of AAPA and Dahlman which teaches searching an actual propagation delay value by using a search strategy based on a determined start propagation delay, where the start propagation delay value is determined based on a detected source radio network region of the mobile station.

Appellant then cites a portion of the Response to Arguments section from the Final Office Action, mailed 21 March 2007, and submits a variety of arguments as to why Examiner's cited propositions were improper. Examiner agrees that "first equating an RTD estimate with an actual propagation delay value and then applying where [sic] the RTD estimate is used to do a search of the actual propagation delay value as in claim 1 is clearly improper." Appeal Brief, p. 9. Thus, Examiner agrees that the rationale for the rejection provided in the Response to Arguments section of the Final Office Action, mailed 21 March 2007, was improper. However, Examiner submits that, as outlined above, the claims are nonetheless obvious in view of AAPA and Dahlman. Examiner notes that "a change in the discussion of, or rationale in support of, the rejection does not necessarily constitute a new ground of rejection." MPEP § 1207.03(III) (citing to *In re Kronig*, 539 F.2d 1300, 1302-03, 190 USPQ 425, 426-27 (CCPA 1976)). As such, Examiner's mistaken rationale provided in the Response to Arguments section of the Final Office Action, mailed 21 March 2007, should not be a basis for finding that the combination of AAPA and Dahlman, as outlined above, fails to render the claims obvious. Simply, Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the

invention to apply Dahlman's search technique to AAPA's system by having AAPA's system detect a source radio network region from which a handover of a mobile device to a present radio network region has been performed and then determine the start propagation delay value based on the detected source radio network region of said mobile station in order to obtain a system which has a shortened search time.

Appellant goes on to contend again that the "search in Dahlman is clearly not based on a propagation delay, or a time difference between an MS and a BS, as in claim 1," Appeal Brief, p. 9, and that "Dahlman can not be seen to be determining a start propagation delay value based on said detected source radio network region," *id.* at p. 10. Again, Examiner agrees that Dahlman, taken individually, does not disclose these limitations. However, Examiner maintains that AAPA does teach searching for a propagation delay value. As such, Examiner maintains that the claims are obvious in view of the *combination* of AAPA and Dahlman, as outlined above.

Appellant concludes the analysis of claim 1 by reasserting that Dahlman, taken individually, fails to teach

> "searching an actual propagation delay value by using a search strategy based on said determined start propagation delay," where the start propagation delay value is determined based on a detected source radio network region of the mobile station and where the search is effected when the mobile station is about to enter a handover.

Id. at pp. 10-11 (emphasis omitted). Again, Examiner agrees that Dahlman, taken individually, does not disclose these limitations. Rather, Examiner maintains that these limitations are taught by the *combination* of AAPA and Dahlman, as outlined above.

With respect to claims 2 and 10, Appellant contends that "maintaining the RTD estimate table can not be seen to disclose or suggest wherein [sic] start propagation delay values are

stored in a database." *Id.* at p. 11. Examiner agrees that, taken on its face, the teaching of an RTD estimate table does not disclose a database storing start propagation delay values. However, claims 2 and 10, depend upon claims 1 and 9, respectively, such that the rejection of claims 2 and 10 should be read by incorporating the rejection of claims 1 and 9, respectively. Thus, the teaching of Dahlman of storing the start delay search values in a database suggests to one of ordinary skill in the art that the start propagation delay values of the system of AAPA and Dahlman should also be stored in a database. As such, Examiner maintains that claims 2 and 10 are obvious in view of the cited prior art.

With respect to claims 3 and 11, Appellant contends that "an improved RTD estimate as a result of synchronization by the MS that is sent to the source BS for updating the RTD estimate table as in Dahlman can not be seen to disclose or suggest updating a database with a searched actual propagation delay value after performing said search step." *Id.* at p. 11. Again, while Examiner agrees that, taken on its face, the teachings of Dahlman do not disclose the claimed limitations, Examiner reiterates that these dependent claims should be read as incorporating the rejection of their parent claims. Thus, the teaching in Dahlman of updating the estimates used to initiate a search by the actual values determined by the search suggests to one of ordinary skill in the art that the database of AAPA in view of Dahlman containing the estimated propagation delays should be updated with the actual propagation delay after performing the search step to obtain improved estimates.

With respect to claims 5 and 13, Appellant notes that Examiner took official notice that averaging is a well-known mechanism for combining a plurality of estimates into a single estimate. Appeal Brief: p. 11. It is unclear whether Appellant is challenging this taking of

official notice. If this is a challenge to the taking of official notice, Examiner submits that Dahlman teaches averaging the estimates used for initial search values (col. 8, ll. 42-48).

In addition, in the same passage, Appellant contends that the rejection of claims 5 and 13 is deficient for the same reasons as presented with respect to claims 2 and 10. Appeal Brief: pp. 11-12. Appellant makes a similar contention with respect to claims 6 and 13. *Id.* at p. 12. Examiner submits that, for the reasons given in response to Appellant's contentions with respect to claims 2 and 10, the rejection of claims 5, 6, 13, and 14, should be sustained.

Further, Appellant contends that the rejection of claims 5, 6, 13, and 14, is improper because "Dahlman clearly does not mention an actual propagation delay search method." Appeal Brief: p. 12. Examiner submits that, as outlined above, it is the *combination* of AAPA and Dahlman which teaches an actual propagation delay search method, not Dahlman individually. As such, Examiner maintains that the rejection of claims 5, 6, 13, and 14 is proper.

With respect to claims 7, 8, 15, and 16, Appellant contends that "Papasakellariou does not disclose or suggest a search strategy in connection with searching for an actual propagation delay value as in claim 1." *Id.* at 13. Examiner agrees that Papasakellariou does not disclose or suggest a search strategy in connection with searching for an actual propagation delay value as in claim 1. Rather, for the above reasons, Examiner submits that the combination of AAPA and Dahlman renders obvious the search strategy of claim 1, such that there is no need for Papasakellariou to render obvious the limitations of claim 1. As such, Examiner maintains that the rejection of claims 7, 8, 15, and 16 is proper.

For the above reasons, it is believed that the rejections should be sustained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Respectfully submitted,

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